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A NEW SPECIES OF FRESHWATER GRUNTER (PISCES: TERAPONIDAE) FROM NORTHERN AUSTRALIA

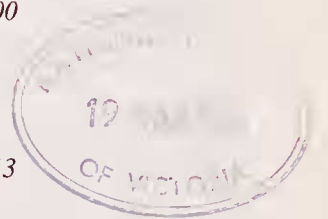
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ABSTRACT

A new species of grunter (Teraponidae) is described from fresh waters of northern Australia. *Pingalla midgleyi* sp. nov. is described on the basis of 40 specimens collected in the Northern Territory from the Daly and Alligator river systems. The species is closely allied to *P. gilberti* from the Gulf of Carpentaria drainage, but differs in colouration and lateral line scale counts. A brief diagnosis for *P. gilberti* is also included.

INTRODUCTION

The freshwater grunters, family Teraponidae, are confined to the Indo-west Pacific region. The group contains wide-ranging marine or estuarine representatives as well as purely freshwater species which are primarily restricted to Australia and New Guinea. The family was recently reviewed by Vari (1978) who recognised 15 genera and 37 species including 23 purely freshwater forms from Australia-New Guinea.

The present paper describes a new species from Australian fresh water which is referable to the genus *Pingalla* as defined

by Vari. The species was illustrated by Lake (1978) who referred to it as the "black blotch anal fin grunter." In the accompanying text Lake mentioned that it is "almost certainly a new species." Comparison of a series of specimens with the closely related *P. gilberti* Whitley (1955) has confirmed Lake's belief. The species was illustrated and diagnosed by Vari (1978), who mis-identified it as *P. gilberti*. We have included a brief diagnosis for *P. gilberti* as it has not been adequately treated in previous literature.

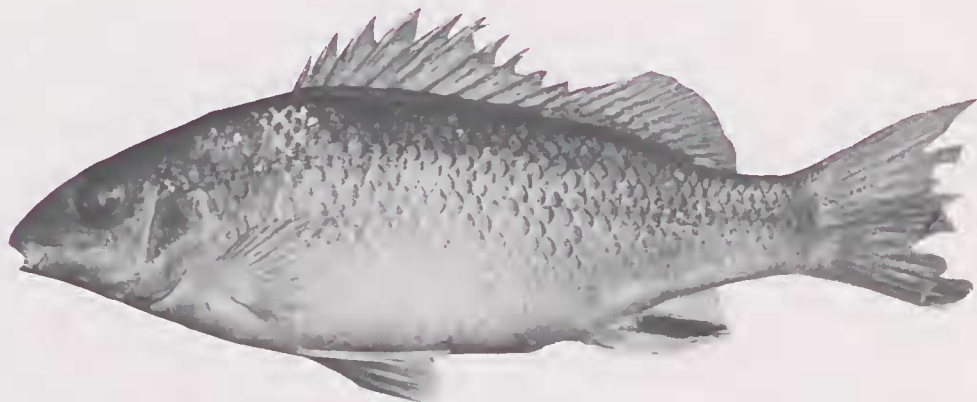


Fig. 1 — *Pingalla midgleyi*, holotype, 87.2 mm SL, Katherine River, Northern Territory.



Fig. 2 — *Pingalla midgleyi*, paratype, 58.6 mm SL, Deaf Adder Creek, Northern Territory.

The format and terminology used in our description follow those of Vari (1978). The range of counts and proportional measurements for the paratypes of *Pingalla midgleyi* are indicated in parentheses following the data for the holotype. Type-specimens have been deposited at the American Museum of Natural History, New York (AMNH); Australian Museum, Sydney (AMS); Northern Territory Museum, Darwin (NTM); and the Western Australian Museum, Perth (WAM).

SYSTEMATICS

• *Pingalla midgleyi* sp. nov.
(Figs. 1 and 2)

Pingalla gilberti (non Whitley): Vari, 1978: 309, fig. 86.

Holotype — NTM S.10795-001, 87.2 mm SL, Katherine River, Northern Territory, Australia, above gorge at junction of Birdie Creek (13°58'S, 132°45'E), seine, H. and M. Midgley, 22 August 1980.

Paratypes — AMNH 35638, 14 specimens, 44-51 mm SL, Barramundi Creek, Northern Territory; AMNH 35639, 2 specimens, 55 and 56 mm SL, South Alligator River, Northern Territory; AMNH 35640, 4 specimens, 49-54 mm SL, South Alligator River, Northern Territory; AMS 1.16859-018, 2 specimens, 60 and 64 mm SL, Alligator River system; AMS I.16858-018, 2 specimens, 62 and 65 mm SL, Alligator River system; NTM S.1239-001, 70.0 mm SL, Jim Jim Creek, South Alligator River system, Northern Territory (13°16'S, 132°49'E); NTM S.1249 to S.1254, 6 specimens, 58.3-64.0 mm SL, Deaf Adder Creek, South Alligator River system, Northern Territory (13°09'S, 132°56'E); WAM P.27050-001, 7 specimens, 50-59 mm SL, small tributary of Deaf Adder Creek, South Alligator River system, Northern Territory (13°09'S, 132°56'E); WAM P.27051-002, 4 specimens, 51-74 mm SL, collected with holotype; WAM P.26702-002, 61 mm SL, Baroalba Springs, East Alligator River system, Northern Territory (12°59'S, 133°08'E).

Diagnosis — A species of *Pingalla* with the following combination of characters: dorsal spines 11 or 12; lateral line scales 33 to 38; anal fin with distinct black blotch between first and fourth soft rays.

Description — Dorsal rays XII,10 (XI or XII,11 to 13, usually XII,12); anal rays III,7 (one paratype with III,8); pectoral rays 13 (12 to 14, usually 14); pelvic rays I,5; tubed lateral line scales 38 (33 to 37), with 2-5 additional tubed scales on base of caudal fin; scales above lateral line (4½ or 5); scales below lateral line 10 (9 to 12); predorsal scales to occiput 10 (8 to 11); sheath scale rows at base of dorsal fin 2; sheath scale rows at base of anal fin 3 or 4; scale rows on cheek 4; gill rakers on first arch 7 + 11 (6 to 9 + 11 to 13); vertebrae 11 + 14 (from Vari, 1978).

Body moderately deep for the family and laterally compressed, greatest depth 3.0 (2.3 to 3.2) in SL. Head relatively short with blunt snout, its length 3.6 (2.9 to 3.5) in SL. Distance from dorsal origin to snout 2.5 (2.2 to 2.6), length of base of dorsal fin 2.0 (1.8 to 2.0), both in SL. Snout length 2.5 (2.5 to 3.0), eye width 3.4 (2.9 to 3.8); jaw length 4.4 (3.5 to 4.5), length of longest dorsal spine 1.8 (1.5 to 1.9), length of longest soft dorsal ray 2.2 (1.8 to 2.3), length of longest anal spine 1.8 (1.5 to 1.9), length of longest soft anal ray 1.9 (1.6 to 2.1), all in head length.

Dorsal profile gradually curving, more pronounced than ventral profile. Dorsal profile convex from snout to interorbital region, then straight to origin of dorsal fin. Ventral profile curved from tip of lower jaw to pelvic fin origin, straight from pelvic base to anus. Jaws equal or upper slightly longer. Gape oblique. Mouth small, nonprotractile. Posterior of maxillary strongly curved downward, reaching to level of posterior nostril or falling slightly short. Teeth flattened with brown tips, depressible and arranged in two rows in each jaw. Outer row of teeth protruding slightly in lateral direction. Inner row of teeth smaller, less flattened and embedded in fleshy inner surface of mouth. Vomer and palatines without teeth. Nostrils separated by a distance about twice greatest diameter of posterior nostril. Lacrimal with several small serrations. Preoperculum distinctly serrate; serration largest on angle. Lower opercular spine stronger and longer than other spines, not extending beyond edge of opercular lobe. Posttemporal exposed, serrate posteriorly with scales on side. Supracleithrum exposed.

Spinous dorsal fin arched, the first spine very short, fourth to sixth spines longest, those following decreasing gradually in length to penultimate which is shorter than ultimate. Longest dorsal spine usually

longer than longest soft dorsal rays. Soft dorsal fin rounded. Second anal spine about twice length of first anal spine, longer and much stronger than third spine, shorter than longest soft anal rays. Pectoral fins pointed, fourth ray (from top) longest. Pelvic fins pointed, first soft ray longest and slightly filamentous, but falling short of anus. Caudal fin emarginate.

Colour in life — A 145 mm specimen was illustrated in Lake (1978) and we have also examined a series of colour transparencies of fresh and live material taken by Mr. S. H. Midgley. The overall coloration is generally smoky grey grading to white on the ventral surface. At close inspection the scales are pale whitish with broad dusky grey margins. There is usually a pronounced silvery sheen on the head and body. A pearly-white longitudinal band is present just below the eye running anteriorly to the premaxillary. Some specimens, particularly juveniles, exhibit two or three faint darkish longitudinal stripes on the upper sides which are described in more detail in the following paragraph. The fins are generally pale ranging from slightly yellow on the dorsal, anal and caudal fins to whitish on the pelvic fins. The most prominent colour marking is

a large black blotch which occupies the anterior half of the soft anal fin.

Colour in alcohol — Overall brownish-grey on dorsal two-thirds of head and body grading to whitish on ventral one-third; a pale band just below eye extending forward to premaxillary; frequently three faint darkish stripes along sides, each about 1-2 scale rows in width: the uppermost stripe just below base of dorsal fin, the middle one positioned 2-3 scale rows above lateral line, and the lowermost one scale row below lateral line for most of its length except corresponding with lateral line scale row on caudal peduncle; dorsal and caudal fins dusky grey; anal fin mainly whitish with prominent black blotch between first four soft rays; pelvic and pectoral fins whitish with slight duskiness on membranes.

Comparisons — Vari (1978) recognised two species of *Pingalla*, *P. gilberti* (Whitley, 1955) from Arnhem Land, Northern Territory and the Gulf of Carpentaria drainage of Queensland, and *P. lorentzi* (Weber, 1910) from central southern New Guinea. His diagnosis and description of *P. gilberti* was based entirely on specimens



Fig. 3 — *Pingalla gilberti*, 78.0 mm SL, Flinders River, Queensland.

from Arnhem Land. Subsequent comparisons by the present authors of *P. gilberti* specimens from the Gulf of Carpentaria and the Northern Territory revealed there are two distinct species involved. The true *P. gilberti* (Fig. 3) is known from the Gilbert, Norman, and Flinders Rivers, lower Gulf of Carpentaria at the base of Cape York Peninsula. Specimens described and figured by Vari (1978) from the Alligator River system of Arnhem Land, Northern Territory are referable to *P. midgleyi*.

Pingalla midgleyi and *P. gilberti* are separable from *P. lorentzi* chiefly on the basis of dorsal spine counts (usually 11 or 12 vs. 13 or 14 for *P. lorentzi*), lateral line scale counts (33-43 vs. 48-54 for *P. lorentzi*), and coloration (most of soft anal fin black in *P. lorentzi*). *Pingalla midgleyi* differs from *P. gilberti* primarily with regards to coloration and lateral line scale counts. The latter species is mainly silvery in life with slightly yellowish pelvic and anal fins. It lacks the prominent black blotch on the anal fin which is characteristic of *P. midgleyi*, although the first 2-3 soft rays of the anal fin sometimes have slightly dusky membranes. There is no apparent overlap in lateral line scale counts: they range from 33 to 38 in *P. midgleyi* and from 40 to 43 in *P. gilberti*.

Distribution — *Pingalla midgleyi* is presently known from the Alligator Rivers system and the upper Katherine River, part of the Daly River system. Both systems are in the Northern Territory, the former draining into the southeast corner of Van Diemen Gulf and the latter into Anson Bay, about 125 km south of Darwin. The headwaters of these systems are separated by a distance of only 10 km. Specimens from the Katherine River are more slender than those from the Alligator system. The body depth of three Katherine River specimens, 54-87 mm SL, ranges from 2.8-3.2 compared with 2.3-2.6 in fourteen Alligator River system specimens, 50-70 mm SL.

Ecology — The Katherine River types were collected from a flowing section of clear water with large rocky pools. The stream bank was composed of sand, silt, soil, and rock, rising gradually to a height of about three metres. The bank vegetation consisted of paperbarks (*Melaleuca* spp.), *Eucalyptus*, and *Pandanus*. *Pingalla midgleyi* was abundant over sand bottoms. Temperature and pH readings of 26°C and 7.0 respectively were recorded. The paratypes from Deaf Adder Creek were taken over sand on the edge of a rocky pool with temperature and pH readings of 27°C and 6.2 respectively. Those from Jim Jim Creek were taken immediately below a large waterfall in open rocky pools with narrow, shallow channels to deep sheltered pools under dense tree cover. A water temperature of 29°C was recorded. Stomach content examination revealed that this species feeds primarily on benthic algae.

Etymology — This species is named after Hamar Midgley of Nambour, Queensland who is responsible for collecting many of the type specimens.

Pingalla gilberti Whitley
(Fig. 3)

Pingalla gilberti Whitley, 1955: 46
(type-locality: Gilbert River, Queensland).

Diagnosis — Dorsal rays XII, 12 or 13; anal rays III, 7 or 8; pectoral rays 14 or 15; tubed lateral line scales 40 to 43; scales above lateral line 5; scales below lateral line 10 to 12; gill rakers on first arch usually 8 + 12 or 13. Greatest body depth 2.6 to 3.0, head length 2.9 to 3.4, both in standard length. Snout length 2.5 to 2.9, eye width 4.1 to 4.7, length of longest dorsal spine 1.7 to 2.1, all in the head length. Colour in alcohol yellowish-brown on upper two-thirds of body grading to yellowish-tan on ventral surface; a faint suggestion of several longitudinal stripes on sides and a row of faint spots at base of soft dorsal fin. Colour

in life silvery, each seale outlined with dusky green; eye pale yellow; fins pale yellow to olive; a faint blotch at front of anal fin.

Remarks — We have examined the type-specimen 59 mm SL (AMS IB.3148) and seven specimens, 72-80 mm SL collected by H. Midgley in the Flinders River at Maxwelton, Queensland (20°43'S,

142°41'E). Three of the latter specimens are deposited at WAM and the remainder are in the private collection of H. Midgley and will eventually be donated to the Queensland Museum. Lake (1978) recorded this species from the Gilbert, Norman, and Flinders Rivers in the Gulf of Carpentaria drainage system of Queensland.

ACKNOWLEDGEMENTS

We thank Hamar and Mary Midgley of Nambour, Queensland for providing valuable specimens of *Pingalla midgleyi* and *P. gilberti* and information on the general ecology of northern Australian teraponids. Collections of *Pingalla* specimens from the Northern Territory by the Midgleys were made possible through the co-operation of the Fisheries Division, Department of Primary Production, Darwin, Northern Territory. Dr. Donn E. Rosen and Mrs. N. Feinberg kindly allowed the senior author to examine paratypes of *P. midgleyi* during a visit to AMNH.

RÉSUMÉ

Une nouvelle espèce de la famille Teraponidae est décrite, provenant d'eau douce dans le Territoire du Nord de l'Australie. Elle habite les eaux de la rivière Daly et la rivière Alligator. *Pingalla midgleyi* sp. nov. s'apparente de près à *P. gilberti* d'Australie du Nord, dans le système d'égouts du Golfe de Carpentaria. Les deux espèces ont des différences significatives dans leurs couleurs et le nombre d'écailles dans la ligne latérale.

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